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COMPLETE SPECIFICATION

Improvements in Shaker Dispenser Packets and Manufacture Thereof.

I, DOMINIC ANTHONY SANNI, a citizen of the United States of America, residing at 73 Reservoir Avenue, Revere, Massachusetts, United States of America, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to the art of commodity packaging and in particular to commodity packets having means incorporated therein for dispensing commodities such as sugar, salt, spices and other products in granular, powder or particle form. In particular, this invention relates to a novel shaker dispenser packet and the manufacture thereof.

Accordingly one object of this invention is to provide novel shaker dispenser packets for powdered and granular material wherein said shaker dispenser packets are made from flexible, impressionable material in strip form traveling through a machine performing a series of operations in predetermined sequence.

Another object of my invention is to provide a novel shaker dispenser packet comprising front and back walls of flexible, impressionable material sealed to each other at their marginal edges, at least one of said walls being deformed prior to being sealed to the other of said walls so that when said walls are in sealed relation they form a fluted unit, and further comprising a perforated folded section of the same or similar material enclosed between said two walls at one end thereof, the walls of said fluted unit being separable in the region of said folded section whereby said folded section may be unfolded to expose the perforations therein and to thereby permit the commodity contained within the unit to be dispensed through said perforations.

Still another object of the invention is to

provide a commodity packet or envelope having a perforated shaker dispenser element incorporated therein, said packet and said shaker dispenser element being formed from a single strip of flexible, impressionable material.

Still another object of the invention is to provide a commodity packet having a perforated shaker dispenser element incorporated therein, said packet and said dispenser element being formed from two separate strips of material. A further object of this invention is to provide a commodity packet having a dispenser element incorporated therein, the packet being formed from two individual strips of similar material and the dispenser element being formed from a third strip of the same or similar material.

Another important object of this invention is to provide a continuous dual or folded web of flexible material comprising a series of transversely extending flutes separated by transversely extending lands, and a perforated folded section running longitudinally of the web and concealed therein; said web being separable along one edge to reveal and unfold said folded section whereby commodity contained within said flutes may be dispensed through said perforations, said web being severable transversely to provide a plurality of shaker dispenser packets, each extending in length a distance equal to, and comprising at least one of, said flutes.

Still another object of this invention is to provide a method of manufacture consisting of a predetermined sequence of operations for converting flexible, impressionable material traveling in strip form into a web of fluted units each having shaker dispenser sections normally enclosed in folded and hidden relation between the faces of said web, the faces of said web being separable to unfold said shaker dispenser section to permit removal of commodity from the unit, the web of fluted units being formed from one, two,

or three individual strips of material, according to different embodiments of this invention.

Another important object of this invention is to provide apparatus which will automatically and continually convert flexible impressionable material in strip form into a web of shaker dispenser packets filled with a selected commodity and closed at one end by a perforated section of the same or similar material folded upon itself and enclosed between the front and back walls of said packets, and to thereafter sever the web to provide a plurality of individual units.

Other objects and many of the attendant advantages of this invention will be readily appreciated as the same becomes better understood by reference to the following detailed description when considered in connection with the accompanying drawings wherein:—

Figure 1 schematically illustrates the method and apparatus for making commodity packets according to one embodiment of this invention;

Figure 1A is a view taken along line A-A of Figure 1;

Figure 1B is a front view taken along line B-B of Figure 1;

Figure 1C is a front view taken along line C-C of Figure 1;

Figure 1D is a perspective view of a portion of the web along line D-D of Figure 1;

Figure 1E is a perspective view of the same web at a later point in time, taken along line E-E of Figure 1;

Figure 1F is a perspective view of the web taken along line F-F of Figure 1;

Figure 1G is a perspective view of the web taken along line G-G of Figure 1;

Figure 1H is a perspective view of the web in the region designated H in Figure 1 as it appears after passing out from between the fluting rolls into position to be filled with the commodity to be packaged;

Figure 1J is a perspective view of one of the fluting or forming rolls;

Figure 1K is a plan view of the web severing elements;

Figure 2 schematically illustrates the apparatus and method for producing a dispenser packet from a single strip of material according to a second embodiment of this invention;

Figure 2A is a view taken along line A-A of Figure 2;

Figure 2B is a view taken along line B-B of Figure 2;

Figure 2C is a view taken along line C-C of Figure 2;

Figure 2D is an exploded view of the folding shoes and the strip as it passes between and is shaped by the shoes, the view being taken in perspective along line D-D of Figure 2;

Figure 2E is a plan view of the loop take-

up mechanism;

Figure 2F is a plan view of the web as it passes between the fluting rolls;

Figure 2G is an enlarged fragmentary plan view of the web as it passes between the fluting rolls;

Figure 2H is a plan view of the web and the top sealing rolls;

Figure 2J is a plan view of the web severing mechanism;

Figure 3 schematically illustrates apparatus and method for making a dispenser packet from two strips of flexible material;

Figure 3A is a view taken along line A-A of Figure 3;

Figure 3B is a view taken along line B-B of Figure 3;

Figure 3C is a perspective view of the web as it appears in the region designated C in Figure 3;

Figure 3D is a view taken along line D-D of Figure 3;

Figure 3E is a perspective view of the web as it appears in the region designated E in Figure 3;

Figure 3F is a sectional view taken along line F-F of Figure 3;

Figure 3G is a sectional view taken along line G-G of Figure 3;

Figure 3H is a perspective view of a portion of the web as it appears in the region designated by H in Figure 3;

Figure 3J is a perspective view of a fragmentary portion of the perforated dispenser strip illustrating the disposition of the strip with respect to its folding shoe;

Figure 3K is a plan view of one of the fluting rolls of Figure 3;

Figure 4 schematically illustrates apparatus and method for forming dispenser packets from two strips of flexible, impressionable material according to another embodiment of this invention;

Figure 4A is a front view of the first scoring sections;

Figure 4B is a front view of the second scoring section;

Figure 4C is a view taken along line C-C of Figure 4;

Figure 4D is a plan view of the forming shoe illustrated in Figure 4C;

Figure 4E is a plan of the loop take-up provided in the machine for compensating for variations in the linear speed of the traveling web;

Figure 4F is a perspective view of one of the rolls incorporated in the machine which simultaneously facilitate fluting and sealing of the web;

Figure 4G is a sectional view taken along line G-G of Figure 4;

Figure 4H is a sectional view taken along line H-H of Figure 4;

Figure 4J is a plan view of the top sealing rolls of Figure 4;

Figure 4K is a plan view of the web severing section of the machine;

Figure 5 is a schematic illustration in the plan of a method and apparatus for forming dispenser packets from three strips of flexible, impressionable material;

Figure 5A is a view taken along line A-A of Figure 5;

Figure 5B is a view taken along line B-B of Figure 5;

Figure 5C is a side view of one of the sealing rolls illustrated in Figure 5;

Figure 5D is a perspective view of a portion of the web of Figure 5;

Figure 6 illustrates a portion of another apparatus and method for forming dispenser packets from three individual strips of flexible, impressionable material;

Figure 6A is a perspective view of a portion of the web of Figure 6;

Figure 7 illustrates a fragmentary portion of the dispensing strip incorporated in the packet produced according to this invention, showing the perforations disposed in series along the fold line; and

Figure 8 is similar to Figure 7 but shows the perforations disposed on either side of the fold line in staggered relation.

Before describing in detail the various embodiments of this invention it is to be noted that the various combinations of mechanical elements are only schematically illustrated for the purpose of conciseness and clarity of description and with the view that persons skilled in the art are capable of practising the invention in its various forms when recourse is had to the following description which identifies the various elements and makes it understood that they are associated to comprise a cooperative system as illustrated that is capable of producing dispenser packets in a continuous stream.

It is also understood without need of illustration that any suitable motor may be utilized to operate the several embodiments and that suitable gearing obvious to persons skilled in the art is employed to synchronize the various moving rolls so as to effect fabrication of the web of packets at a constant high rate of production.

Further in the interest of conciseness, and because they go hand in hand, the description of each of the several mechanical systems is incorporated hereinafter and forms part of the description of the particular method which it is designated to carry out.

Referring to Figure 1, there is illustrated a practical embodiment of my invention, consisting of a machine which receives a single strip of web of flexible, impressionable material and thereafter converts said single strip of material into a plurality of dispenser packets filled with a suitable commodity.

It is to be understood without need of illustration that the different parts or mem-

bers of the machine, illustrated schematically in Figure 1; and Figures 2, 3, 4, 5 and 6 as well, are mounted on a suitable base or frame, and that the base or frame is adapted in a conventional manner to journal the various shafts for high speed rotation.

As illustrated, a horizontally positioned web of flexible, impressionable material 2, e.g., paper, coated on both sides with a suitable thermoplastic, pressure-sensitive adhesive, and having a longitudinal series of small perforations 4, is subjected to a series of operations which results in production of a series of novel shaker packets P.

The first operation consists in feeding the web 2 from a supply roll 6 by means of feed rolls 8 and 10, one or both of which may be driven at a uniform speed, through two scoring assemblies.

The first scoring assembly or section comprises a smooth face roll 12 and a single scoring roll 14 mounted above and below the web respectively. Scoring roll 14 may be any suitable type of scoring roll and is positioned to score the web along the line along which run the perforations 4. The second scoring assembly comprises two scoring rolls 16 and 20 mounted on the same shaft above the web 2 and a plain roll 22 mounted below the web. If desired the scoring rolls 16 and 20 may take the form of two circular scoring elements carried on the same cylindrical body or roll according to conventional practice. Preferably the scoring elements of the second assembly are so spaced as to score the web along two lines removed from its edges a different amount so that the finished packets will have an overlapping lip that makes it easier to open, as explained hereinafter. However, they may be equally spaced from the opposite edges if desired.

The second scoring assembly precedes a conventional loop takeup assembly comprising rolls 24, 26, 28, 30 and 32. The position of roll 32 is adjustable to bring any printed matter on the web into registration with the flutes being formed in the web at a subsequent stage.

From the loop takeup section the web advances between heated male and female fluting rolls 34 and 36 respectively which are driven at equal speeds by any suitable mechanism. Rolls 34 and 36 form flutes 38 and 40 in the web extending inwardly from the web's marginal edges as illustrated in Figure 1D. It is to be understood, of course, that only a single series of flutes, either 38 or 40, may be provided if desired. The resulting packet will then have only one of its front and back walls fluted.

Thereafter guide rolls 42 and 44 engage the web between flutes 38 and 40 and carry it to a forming section wherein the strip is folded downwardly about the center scoring line made by scoring roll 14, and upwardly

about the two score lines formed by scoring rolls 16 and 20.

The forming section comprises several stages. In the first stage, as illustrated in Figure 1E, the web passes over a triangular forming shoe 48 and beneath two forming shoes 50 and 52 provided with inclined faces that are parallel to the inclined sides of shoe 48. Shoes 50 and 52 co-operate with shoe 48 to force the center section of the web upwardly so as to cause the web to fold downward about the center score line along which run perforations 4. Forming shoes 50 and 52 also act to maintain the fluted portions 54 and 56 of the web in substantial horizontal alignment so as to promote folding along the score lines made by rolls 16 and 20. Thereafter the web passes between forming shoes 58 and 60 which bring the center folds 55 and 57 of the web together while simultaneously permitting the fluted sections 54 and 56 of the web to be shifted upwardly to a position slightly inclined from the horizontal. Thereafter the web passes between and under other forming shoes 62 and 64 whose inclined outer surfaces permit the fluted portions 54 and 56 to be brought still closer together.

For the purpose of facilitating folding of the web as described, it is to be understood that one single set of shoes may be substituted in place of the three sets of shoes illustrated in Figures 1E, 1F and 1G. Figure 2D, described hereinafter, illustrates how a single set of folding shoes may be utilized to effect rapid folding of the web along its score lines.

The upward shifting of the fluted sections against shoes 62 and 64 is caused by sealing rolls 66 between which the web passes and is completely converted to a double or dual web 2A. While only one sealing roll 66 is shown, it is understood that a second identical roll is positioned behind it and is driven in synchronism therewith. Sealing rolls 66 operate to seal the fluted sections 54 and 56 together along the lands which extend transversely of the web between successive flutes.

The web 2 is drawn through the forming or folding section by a pair of drive rolls 70 positioned on either side thereof and engaging the web along its bottom edge 59. A second pair of drive rolls 72 is employed to draw dual web 2A through successive stages following sealing rolls 66.

The contour of each sealing roll 66 is subdivided into three types of sections, 76, 78 and 80. Sections 76 are elevated with respect to sections 78 and 80, and extend substantially the whole length of the roll. Sections 76 are the surfaces that seal the folds of the dual web together. Sections 78 are recessed between sections 76 to receive the flutes formed in the web by rolls 34 and 36. Section 80 is intermediate in depth between sec-

tions 76 and 78 so as to prevent the portion of the web between its bottom edge 59 (Fig. 1) and the ends of the flutes from being sealed.

As the web leaves sealing rolls 66 it passes through a feeding section comprising a gravity feed hopper 82 filled with a suitable commodity, e.g., salt, and a blower 84. The commodity within the hopper is permitted to drop by gravity to fill the pockets 86 formed by the flutes of the web. Since the amount of the product discharged from the hopper is usually in excess of the amount which pockets 86 are to hold, blower 84 is utilized to blow off the excess product and is so positioned as to remove all commodity above a predetermined level in the pockets so as to permit sealing off the top of the web. The top sealing is accomplished by a pair of sealing rolls 88. It is to be noted and understood that sealing rolls 66 and 88 are heated to facilitate rapid sealing.

The web then passes through a cutting section comprising a plain roll 90 and a knife roll 92 which transversely severs the web into strips comprising a predetermined number of packets P which are individually detachable by tearing along perforations 94 made by knife roll 92.

It is to be noted that perforations 4 are hidden from view in the sealed packet P, and so long as the inner folds 55 and 57 of the packet are not parted from each other, the commodity will be retained within the packet. However, when the front and rear walls of the packet are separated along the edge 59 to part the inner folds 55 and 57, the commodity will be free to flow out of the packet through perforations 4 when the packet is shaken. Separation of the front and rear walls is facilitated by virtue of the fact that one wall of the packet overhangs the other due to the positioning of scoring rolls 16 and 20, and also because inner folds 55 and 57 and the front and back walls are not sealed at areas 61 in alignment with the pockets formed by the flutes.

Referring to Figure 2, a horizontal web 102 coated on both sides and provided with perforations 104 (see Figure 2D) is continually fed from a supply roll 106 by drive rolls 108 and 110, either or both of which may be driven. Thereafter the web is drawn by drive rolls 112 and 114 through a scoring section similar to the scoring section illustrated in Figure 1. In this instance the scoring section comprises two stages, wherein scoring roll 116 and plain roll 117 comprise the first stage and dual scoring rolls 118 and plain roll 120 comprise the second stage.

Then the web is advanced through a forming section comprising male member 122 and female member 124 positioned above and below each other respectively. The forming elements are supported on the frame of 130

the machine by any suitable means (not shown). Thus, for example, rods 126 of male member 122 may be secured to a crosspiece of the machine. Female member 124 may be

5 similarly mounted.

The function of members 122 and 124 is to fold the web along its score lines so that the perforated central portion of the web is sandwiched between the major marginal portions in the same manner as the web of Figure 1. As shown in Figure 2D, the three score lines 128, 130 and 132 divide the web into four longitudinal strips identified as inner folds 134 and 136 and marginal portions 138 and 140. The center score line 130 coincides with perforations 104. The folding members 122 and 124 operate to rapidly bend the inner folds 134 and 136 downwardly about score line 130 and to force the marginal portion upward about score lines 128 and 132. The latter score lines are unevenly spaced from the center score line so that one of the inner folds is wider than the other and overlaps the other as at 142. In order that the edges of the web will coincide with each other without overlapping when the marginal portions 138 and 140 are brought together, the center score line is preferably made closer to one edge of the web. Thus in Figure 2D, while not readily apparent, it is to be understood that score line 130 is closer to the left hand edge than it is to the right hand edge of the web.

From the forming or folding section the web is conducted through a takeup section comprising rolls 144, 146, 148, 150 and 152. All but roll 152 are fixed, and one or both of the rolls of each pair of fixed rolls may be driven. Roll 152 is moveably mounted in a conventional manner to bring printing on the web into registration with the flutes formed at a subsequent stage.

Thereafter the web advances to a forming and sealing section comprising sealing rolls 156 and 158 and moving endless belt 160 carrying spacer fingers 162. Endless belt 160 is carried by two sprocket assemblies 164 and 166 which are vertically spaced from each other by a predetermined amount. Preferably the spacing between the two sprockets is such that the endless belt running between the sprocket is inclined to the horizontal by an angle equal to 10—15 degrees. Spacer fingers 162 are in turn inclined to the belt at an equal angle so that as the fingers move from the lower sprocket 164 to the higher sprocket 166, they are directly vertical. The belt is positioned so that its fingers will pass between the upright marginal portions 138 and 140 of the web as illustrated and be exactly vertical as the web passes between sealing rolls 156 and 158. The sealing rolls and the endless belt are driven in synchronism so that fingers 162 will be received in the surface cavities 168 and 170 of the rolls as the latter rotate. Sealing rolls 156 and 158 are substantially

identical to the sealing rolls illustrated in Figure 1, and operate in the same manner to seal the web at predetermined transversely extending lands 172. In this case, however, the flutes 174 are formed by fingers 162 and cavities 168 and 170 simultaneously instead of previously with respect to the sealing operation. A steam chest 176 provided with one or more jets applies steam to the web to condition it for molding the flutes. It is understood, of course, that sealing rolls 156 and 158, as is true of similar sealing rolls illustrated in the other embodiments, are heated to facilitate rapid sealing of the web.

The web is drawn out from between the sealing rolls by two pairs of drive rolls 178 and 180 which grip the web along its lower edge. As illustrated in Figure 2F, the web passing out from between the sealing rolls comprises a series of pockets 182 formed by flutes 174 and lands 172. The fingers 162 are lifted out of the pockets 182 by belt 160 as the web proceeds beyond the sealing roll to a feeding station where a suitable commodity is fed to the pockets by gravity from a hopper 186. The amount of commodity in the pocket is reduced to a predetermined level by a suitable blower means 188 and then the top of the web passes between a pair of driven heated sealing rolls 190 which seal off the pockets just above the level of the commodity therein. The web then proceeds to a knife section comprising plain roll 192 and knife roll 194 which severs the web into strips comprising a plurality of packets P which are partly severed from each other by the knife rolls as indicated at 196 so as to facilitate complete separation into individual units as desired.

A modified form of the same packets is produced by the modified method and machine illustrated in Figure 3. In this case, the commodity packet is formed from two pieces instead of a single piece of flexible, impressionable material.

As illustrated a primary web 202 provided with a thermoplastic coating only on its upper surface, is continually fed by feed rolls 206 and 208 from a supply roll 204 to a scoring section having two stages. In this case, the scoring section is the reverse of the scoring sections illustrated in Figure 1 and Figure 2. The web is first scored on its underside by means of a dual scoring roll 210 operating in unison with a plain roll 212; thereafter the primary web 202 is scored on its upper surface by a single scoring roll 214 operating in conjunction with a plain roll 216. The web is drawn out from the scoring section and passes through a loop takeup generally designated 220 similar to the loop takeup of Figures 1 and 2.

From the loop takeup section, the web passes through a fluting section comprising male roll 230 and female roll 232. These

rolls are similar to fluting rolls 34 and 36 illustrated in Figure 1 and operated to place a series of flutes 234 and 236 along both edges of the web.

5 As the primary web passes from between fluting rolls 230 and 232 it is converted by folding to a two-faced or dual web, the web being folded upwardly about the score line 215 produced by score roll 214. Preferably
10 score line 215 is closer to one edge of the web than it is to the other. The web is folded upwardly about a forming shoe 240 shown in section in Figure 3D. Shoe 240 is similar
15 in shape to the shoe 260 illustrated in Figure 3J and is oriented in the same direction as shoe 260 is shown to be oriented in Figure 3. However, shoe 240 is positioned with its bottom surface in a horizontal plane. The upward folding of the web is caused by a pair
20 of identical driven heated sealing rolls 242 which draw the folds of the web into sealing engagement with each other. The cross hatching at 243 indicates the portions of the web that are sealed by the surface 244 that
25 engages the web between the flutes and at the bottom end of the flutes. Surface 244 is provided with recesses 248 that accommodate the flutes in the web. Surface 244 terminates short of the upper end of the sealing rolls so
30 that the marginal portions 248 and 250 determined by score lines 211 are not sealed to each other.

After passing out from between sealing rolls 242 the web is moved by drive rolls 280 and
35 282 beneath a hopper 254 that feeds a commodity to the pockets 256 formed between the flutes in the dual web. A blower 258 reduces the commodity in the pockets to below the level of score lines 211.

40 Then the marginal portions 248 and 250 are folded outwardly by a shoe 260 which is suspended from the frame of the machine by a suitable support such as arm 262 mounted on its upper surface. Shoe 260 is wedge-shaped and its wide edge 266 is mounted
45 nearest blower 258. The shoe is supported with its top surface 264 horizontal so that its bottom surface 268 is inclined as shown. Mounted above shoe 260 is a supply roll 270
50 from which is drawn a secondary web 272 provided with perforations 274. Web 272 is thermoplastically coated on its under side only. Web 272 passes through a scoring section comprising scoring roll 276 and plain
55 roll 278 which scores the web along perforations 274. Web 272 passes around a guide roll 280 and then under shoe 260 which folds the web as shown in Figure 3J and positions it between marginal portions 248 and
60 250.

Then the dual primary web 202 and the secondary web 272 pass between heated top sealing rolls 284 which seal the marginal portions 248 and 250 to each other as illus-
65 trated by the cross-hatching in Figure 3H.

The longitudinal surfaces 286 and the circumferential surfaces 288 of the rolls 284 operate to seal the marginal portions between the flutes to each other and to the secondary web therebetween, surfaces 286 seal the marginal
70 portions at their edges whereas surfaces 288 leave the edges unsealed so as to facilitate separation for subsequent release of the commodity in the packet. A knife section 290 divides the composite sealed web into strips
75 292 of packets P.

Figure 4 illustrates a modified method and apparatus for forming packets from two individual strips of flexible material. In this case, a web 300 coated on its top surface only
80 is fed by drive rolls 304 and 306 from a feed roll 302 and passes to a two stage scoring section comprising rolls 308, 310, 312 and 314 like the scoring section illustrated in Figure 3. The web passes out from the scoring
85 section over a guide roll 316 to a forming section comprising a folding shoe 318 identical in shape to the shoe 260 illustrated in Figures 3 and 3J. The shoe 318 is provided with a suitable bracket 319 by which it can be
90 secured in position to the frame of the machine. The web passes beneath the shoe and is folded up about the shoe as it travels to the right away from the scoring section. The shoe 318 tapers from its broad horizontal
95 back edge 320 to its vertical front edge 321, causing the web to be folded from its unfolded horizontal position to a folded vertical position, forming a dual web as it passes beyond the shoe.
100

A loop takeup comprising rolls 322, 323, 324, 325, and 326 is provided to bring any printing on the web into registration with the flutes. The web then passes to a fluting
105 section comprising a pair of heated sealing and fluting rolls 328 and an endless belt 330 carrying spacer fingers 334. Rolls 328 comprise curved depressions 336 for accommodating the vertical folds 300a and 300b of the web as they are separated from each other and
110 deformed by fingers 334. Figure 4G illustrates how the fingers 334 cooperate with the depressions 336 to form flutes 338 and 340. Rolls 328 also comprise raised surfaces 344 which contact the folds of the web and seal
115 them together to form lands 346 which make pockets 348 between facing flutes 338 and 340. Surfaces 344 do not entirely engage the dual web from the top to the bottom but leave unsealed the marginal portions formed by the
120 score lines 350 and 352 produced by the dual scoring roll 308.

The fluted web passes from between rolls 328 and passes through the gravity feed section comprising hopper 354 and blower
125 356. Thereafter, the marginal portions of the web are again spread outwardly about the score lines 350 and 352 so as to permit a second web of thermoplastically coated material 360 to be inserted there-between.
130

Web 360 is coated on its underside only.

The outward folding of the marginal portions of the web is accomplished by a folding shoe 364 which operates to fold web 360 in the same manner that shoe 260 functions (see Fig. 3). Web 360 has perforations 366 and is fed from a roll 370 and passes around a driven guide roll 372 and under and beneath forming shoe 364. The web then continues between heated rolls 376 similar in construction and function to roll 284 illustrated in Fig. 3; sealing the web along the upper portions thereof. The web is then severed by knife roll 378 operating together with plain roll 380 to form strips 382 of packets P as previously described. The web 360 may have its perforations 366 along the fold or score line as in Fig. 7 or on either side of the score line as in Fig. 8. The perforations 366 in Fig. 8 may be either staggered as shown or directly opposite each other.

The foregoing methods of forming the novel dispenser packet can be modified still further to permit the packet to be formed from three individual strips of flexible material. Figures 5 and 6 illustrate how this may be accomplished.

In Fig. 5 two webs of material 400 and 402 are fed in synchronism from their supply rolls 404 and 406 respectively. Webs 400 and 402 have thermoplastic coatings on the adjacent or facing sides. Drive rolls 408 and 410 draw web 400 from supply roll 404. Drive rolls 412 and 414 draw web 402 from supply roll 406. Web 400 passes through a single stage scoring section comprising scoring roll 416 and plain roll 418, and is scored on its outer surface adjacent to its top edge. It then passes between male and female sealing and fluting rolls 420 and 422 respectively which make transverse flutes therein.

Web 402 passes through a scoring section comprising scoring roll 424 and smooth roll 426 which scores the web along its outer surface adjacent to its top edge. Then web 402 passes between male and female sealing and fluting rolls 428 and 430 which are identical in construction to rolls 420 and 422 respectively. Only rolls 422 and 430 are heated, and they are positioned adjacent each other and operate in synchronism so that cavities 432 and 434 bring fluted portions of the two webs into matching and facing relation as the two webs pass between rolls 422 and 430. Rolls 420 and 428 also operate in synchronism so that the flutes of the two webs will coincide with each other upon arrival at the female rolls. A dual web 403 comprising pockets 436 is formed by the latter.

While not shown, it is understood that the remainder of the machine on Fig. 5 comprises the elements shown in Fig. 3 following dotted line M—M, so that web 403 is advanced first to a commodity supply when its pockets 436 are filled, then to the next

station where a third perforated web identical to web 272 is folded and positioned between the top unsealed portions of the dual web 403, thereafter between a pair of top sealing rolls, and finally to a severing section, all accomplished as shown in Fig. 3.

Figure 6 illustrates a method and apparatus similar to that of Fig. 5 wherein the like numbers designate like elements. However, in Fig. 6 a single smooth roll 444 is substituted for female roll 430 and male roll 428. Smooth roll 444 occupies the same position relative to roll 422, as roll 430 occupies relative to roll 422. Consequently web 402 remains unfluted and is secured to web 400 as it passes between rolls 422 and 444 to form a dual web 403 comprising pockets 436 that are one-half the size of pockets 436 of Fig. 5.

It is to be understood that the term "dual web" and the term "two-face web" are interchangeable and are intended to embrace a web presenting two parallel layers, formed either by two individual webs secured to each other in parallel engaging relation, or by a single web folded upon itself. The former situation occurs in Figs. 5 and 6; the latter type of fabrication occurs in Figs. 1 and 4.

It is also to be understood that dispenser packets may be manufactured according to the present invention from paper, Cellophane (Registered Trade Mark), or any other synthetic sheet material capable of being molded or fluted.

Obviously many modifications and variations of the present invention are possible in the light of the above teachings. Therefore it is to be understood that the invention is not limited in its application to the details of construction and arrangement of parts specifically illustrated and that within the scope of the appended claims it may be practised otherwise than as specifically described or illustrated.

What I claim is:—

1. A commodity package having a closed bottom and comprising front and back walls 110 and an expandable pleat between said walls at their top edges, said pleat being perforated, the folds of said pleat being breakably sealed to each other, said front and back walls being heat sealed to each other at their side edges 115 from the bottom of said package up to said pleat and being heat sealed to the folds of said pleat above the bottom of said pleat.

2. A commodity package of the type defined by claim 1 wherein the top edge of 120 one of said walls overlaps the top edge of the other of said walls.

3. A commodity package of the type defined by claim 1 wherein said front and back walls are individual elements secured to each other 125 along their bottom edges.

4. A commodity package of the type defined by claim 3 wherein at least one of said walls is fluted.

5. A commodity package of the type 130

defined by claim 1 wherein said front and back walls form portions of a single sheet of impressionable material, at least one of said walls being fluted.

5 6. A commodity package of the type defined by claim 1 wherein said expandable pleat is an individual element sealed to said front and back walls along its edges.

10 7. A multi-layer web fabricated of crease-retaining, thermoplastic-coated material and severable into a plurality of individual commodity packages of the type defined by claim 1, said web comprising, a first outside layer having a plurality of flutes, a second outside layer sealed to said first layer along one of the two longitudinal edges thereof and also at spaced transversely-extending areas to form a series of transversely extending open end pockets, and a third layer enclosed between said first and second layers proximate to the other longitudinal edges of said first and second layers, said third layer having a plurality of small perforations and being folded upon itself to close the open ends of said pockets, the folds of said third layer being firmly secured to the inner surfaces of said first and second layers at their edges and being breakably secured to each other, whereby to maintain said third layer in folded relation.

30 8. A multi-layer web fabricated of thermoplastic-coated material and severable into a plurality of individual commodity packages of the type defined by claim 1, said web comprising a first outside layer having a plurality of flutes, a second outside layer, said first and second layers being secured to each other along one edge thereof and also at longitudinally-spaced transversely-extending areas to form a series of transversely extending pockets, and a third layer enclosed between said first and second layers along the opposite edges thereof, said third layer being perforated and folded longitudinally of said web, the folds of said third layer being breakably secured to each other so as to maintain said third layer in folded relation.

50 9. A multi-layer web fabricated of crease-retaining thermoplastic-coated material and severable into a plurality of individual commodity packages of the type defined by claim 1, said web comprising a facing section having a plurality of flutes, a backing section secured to said facing section and forming therewith a series of transversely extending compartments, and a folded section having a plurality of perforations, said folded section being positioned between said facing and backing sections and co-operating therewith to close one end of said compartments.

60 10. A multi-layer web fabricated of crease-retaining thermoplastic-coated material and severable into a plurality of individual commodity packages of the type defined by claim 1, said web comprising, a first wall section

provided with a plurality of flutes extending transversely of said web, a second wall section secured to said first wall section at areas between said flutes to form a series of pockets, a third wall portion extending between said first and second wall sections and occupying one end of said pockets, said third wall section being folded accordian-wise between said first and second sections and having a plurality of openings communicating with said pockets, said first and second sections at said one end of said pockets being so secured to each other as to be readily separable to unfold said third wall section to expose said holes, and a commodity contained in said pockets.

80 11. The method of making a series of commodity-containing packages of the type defined by claim 1 comprising, advancing a strip of flexible impressionable material through a series of operations including the steps of forming a dual web of said material comprising a series of closed flutes each extending transversely of said web and enclosing therebetween a perforated strip longitudinally folded upon itself, filling said flutes with a commodity to be packaged during the formation of said web, and severing said web between said flutes.

90 12. The method of making a series of filled commodity packages of the type defined by claim 1 comprising, advancing a sheet of material through a series of operations including the steps of forming a dual web of said material having a series of transversely extending flutes, providing a V-shaped perforated pouring wall between the sides of the flutes at one end of said flutes, and sealing said flutes to form a series of commodity containing units.

105 13. Apparatus for making a series of packages of the type defined by claim 1 comprising, means for advancing a sheet of flexible impressionable material, means for forming a dual layer web of said material with a perforated pleat between said layers, means for sealing said layers together at regular intervals to form a series of open end pockets, means for filling said open end pockets with a suitable commodity, and means for closing said pockets and severing said multi-layer web between successive pockets to form a plurality of closed commodity-containing packages.

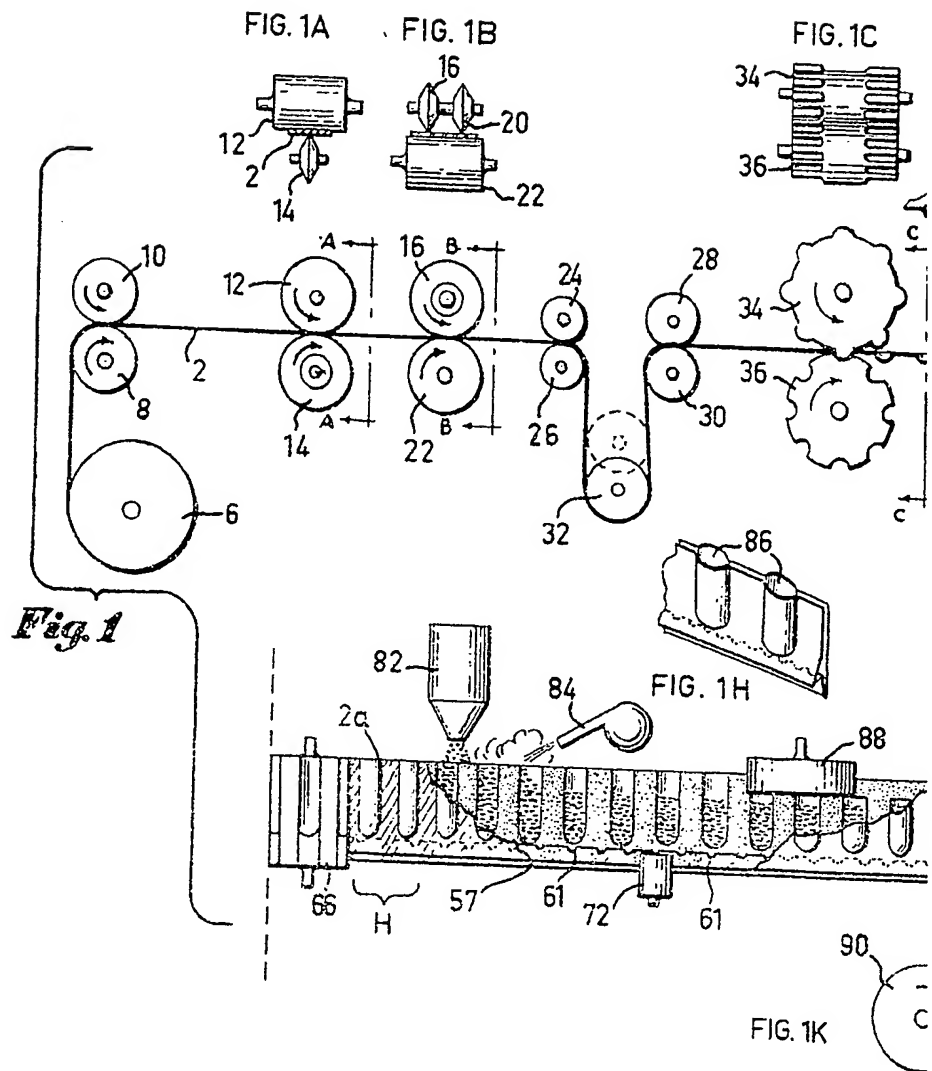
115 14. Apparatus as defined by claim 13 wherein said means for forming a dual web includes male and female fluting rolls.

120 15. Apparatus as defined by claim 13 wherein said means for forming a dual web includes a pair of female fluting rolls and spacer means moveable between said fluting rolls for causing said material to be fluted by said rolls.

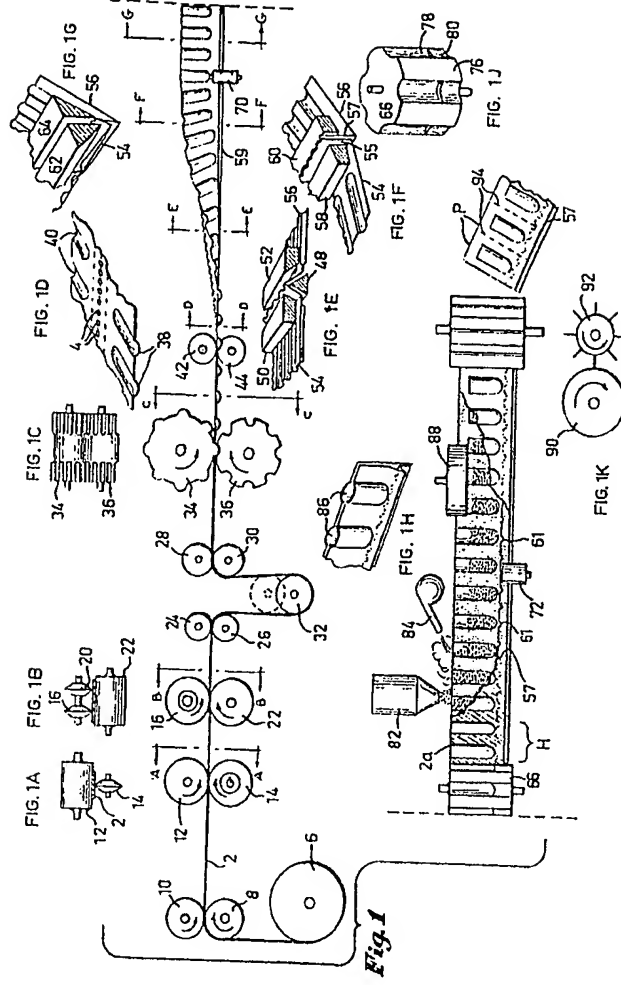
125 16. The method of forming a web of the type defined by claim 9 comprising, folding a strip of flexible impressionable material longitudinally to form four longitudinal

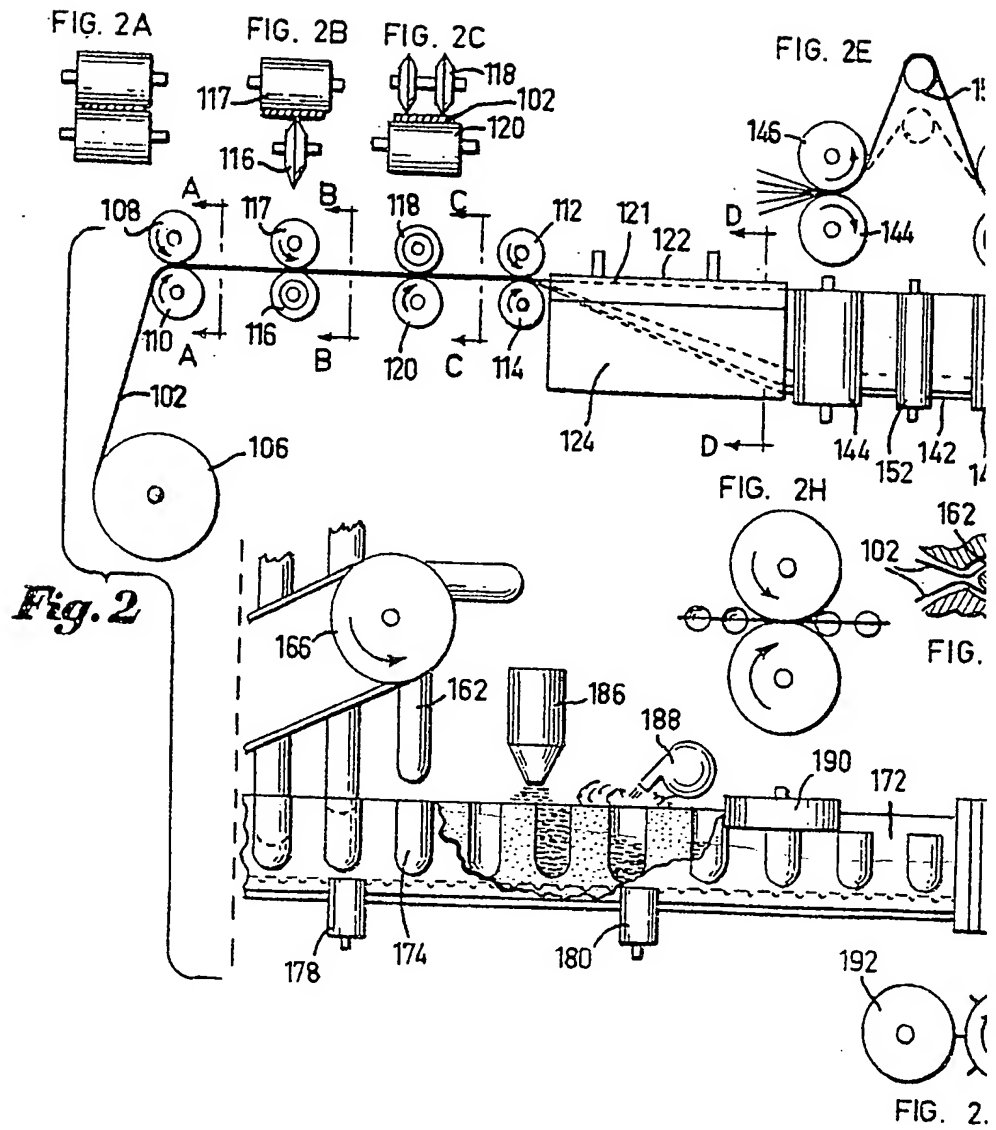
- sections defined by three longitudinal folds, the two inner sections being folded in one direction and the two outer sections being folded in a reverse direction, forming a series of flutes in at least one of said outer sections, sealing said two inner sections and said two outer sections together at the land areas intermediate said flutes, filling the spaces defined by said flutes between said two outer sections with a selected commodity, and sealing said two outer sections together along corresponding edges to close off said spaces.
17. The method of claim 16 wherein at least one of said inner sections is perforated.
18. The method of claim 16, further including the step of severing said inner and outer sections between said flutes transversely of said longitudinal folds to form a plurality of commodity containing dispenser packages.
19. Apparatus for making a series of packages of the type defined by claim 1 comprising, means for advancing a strip of flexible impressionable material, means for folding said material longitudinally as it advances into four longitudinal sections, the two inner sections being folded in one direction and the two outer sections being folded in a reverse direction, means for forming a series of transversely extending flutes in at least one of said outer sections, means for transversely sealing said four sections together between said flutes to form a series of compartments, means for filling said compartments, and means for longitudinally sealing said outer sections together to close off said compartments.
20. A commodity package of the type defined by claim 1 comprising, front and back walls in face to face relation, said front wall comprising side marginal portions sealed to said back wall and a fluted portion extending between said marginal portions in convex relation to said back wall, a perforated intermediate wall folded upon itself and confined between said front and back walls at the top ends thereof, said front and back walls being separable from each other at said top ends to unfold said intermediate wall and expose said perforation.
21. An improved shaker dispenser packet substantially as hereinbefore described with reference to the accompanying drawings.
22. An improved method of making shaker dispenser packets substantially as described with reference to the accompanying drawings.

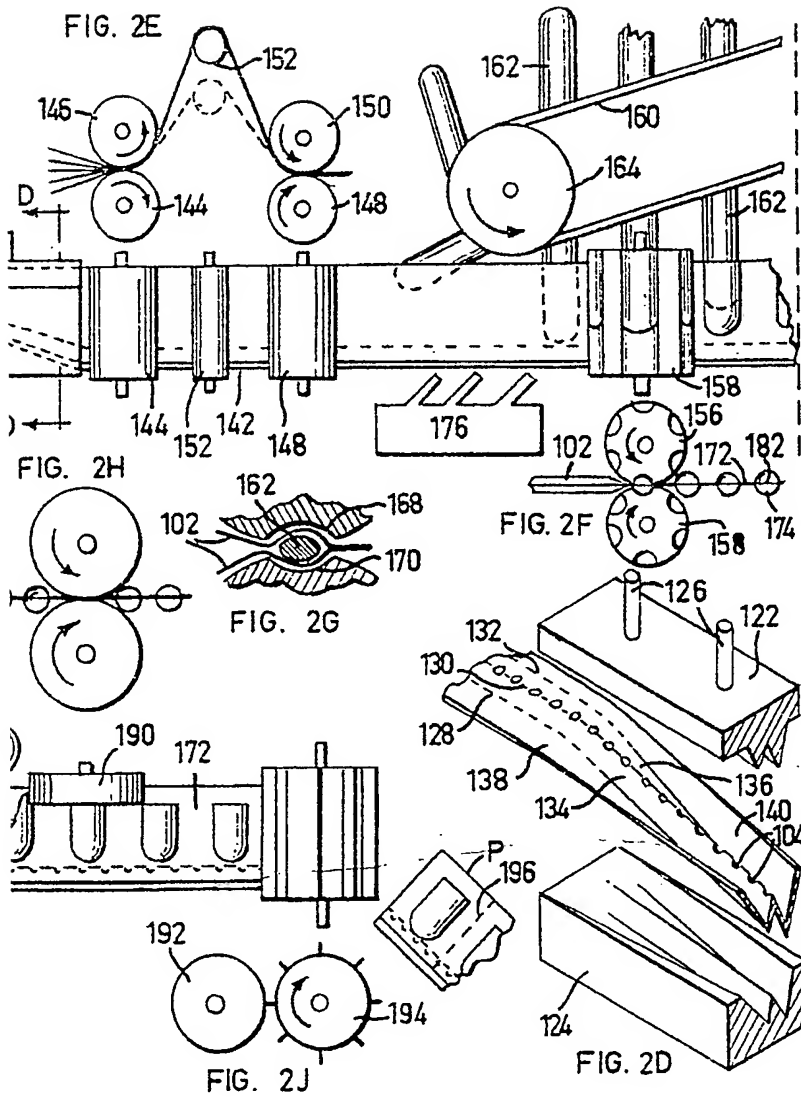
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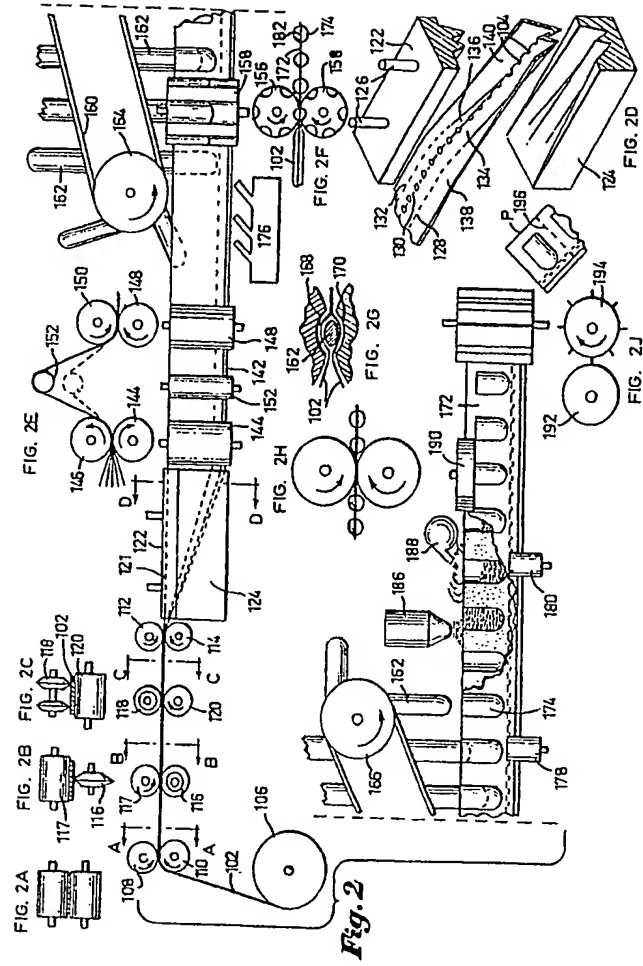


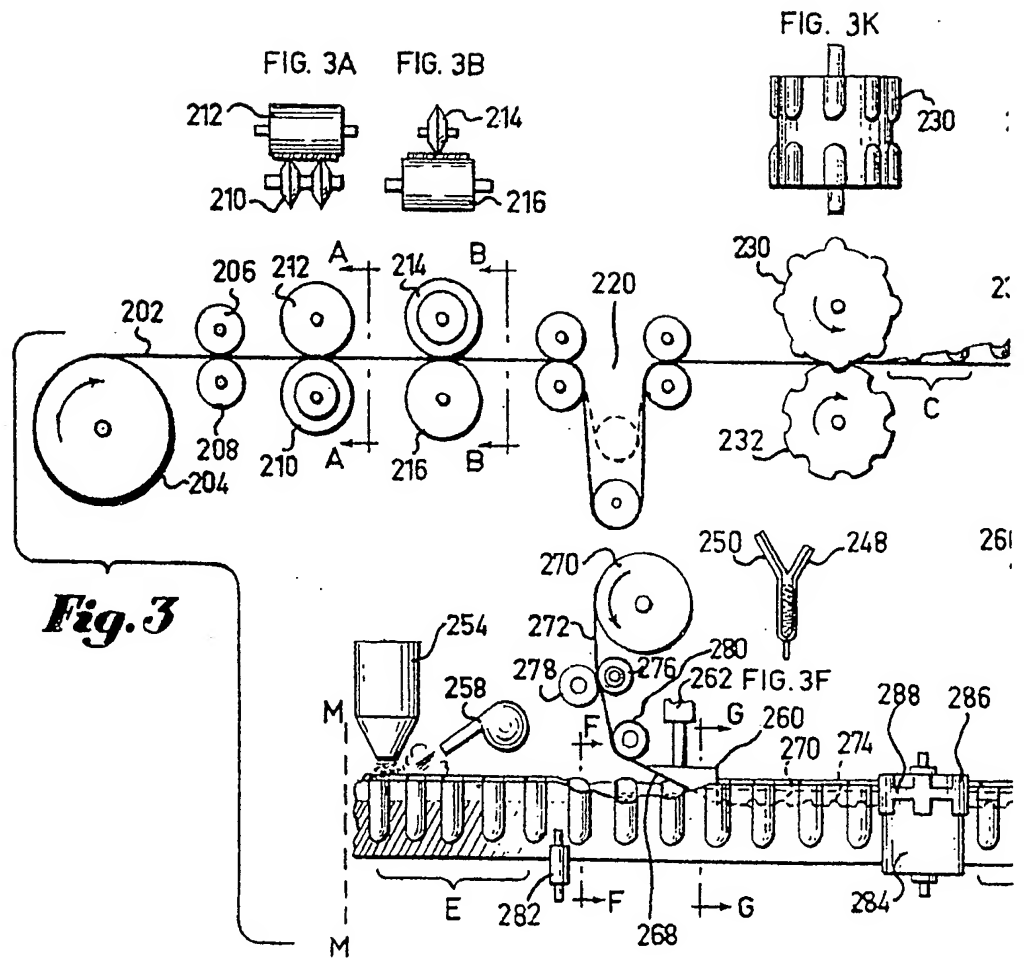


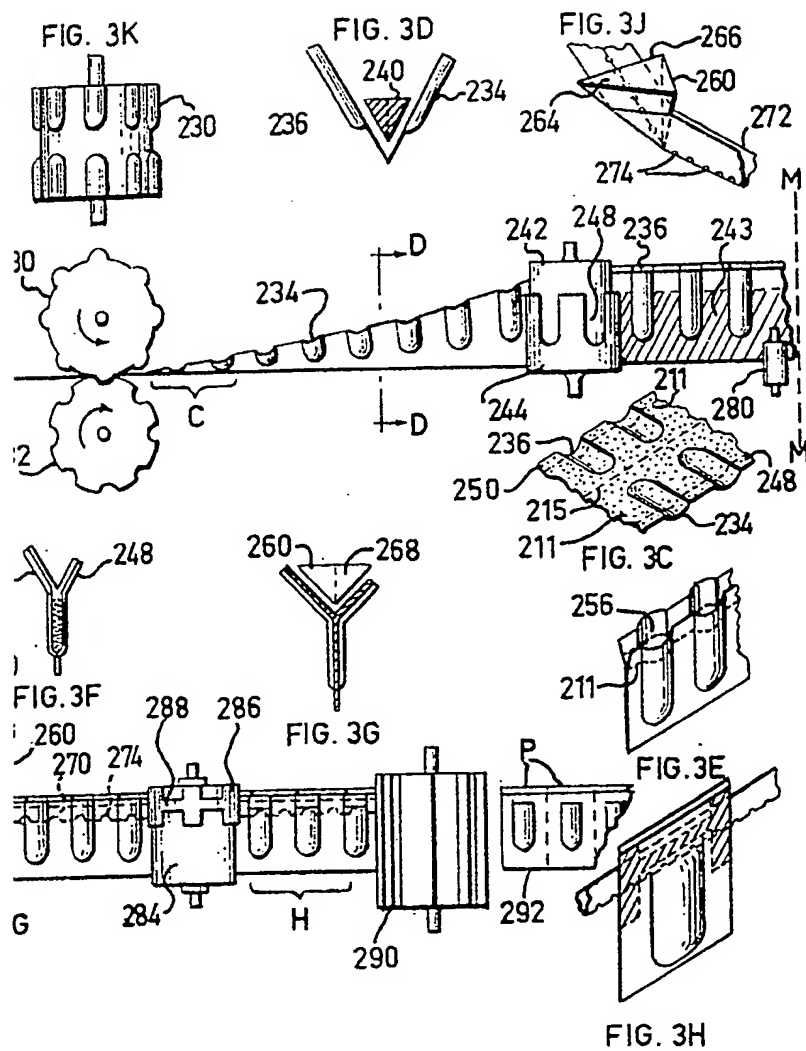


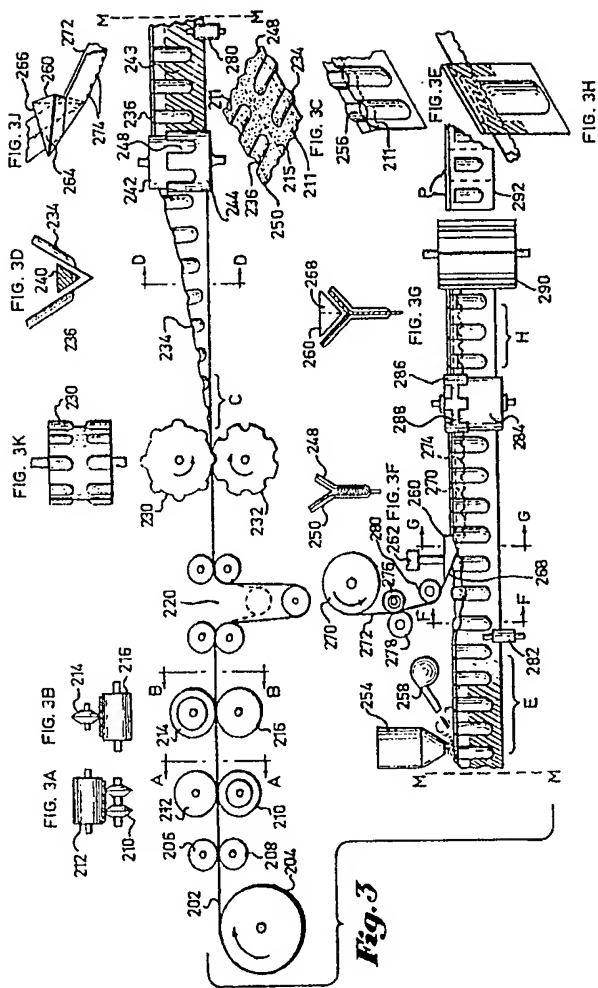


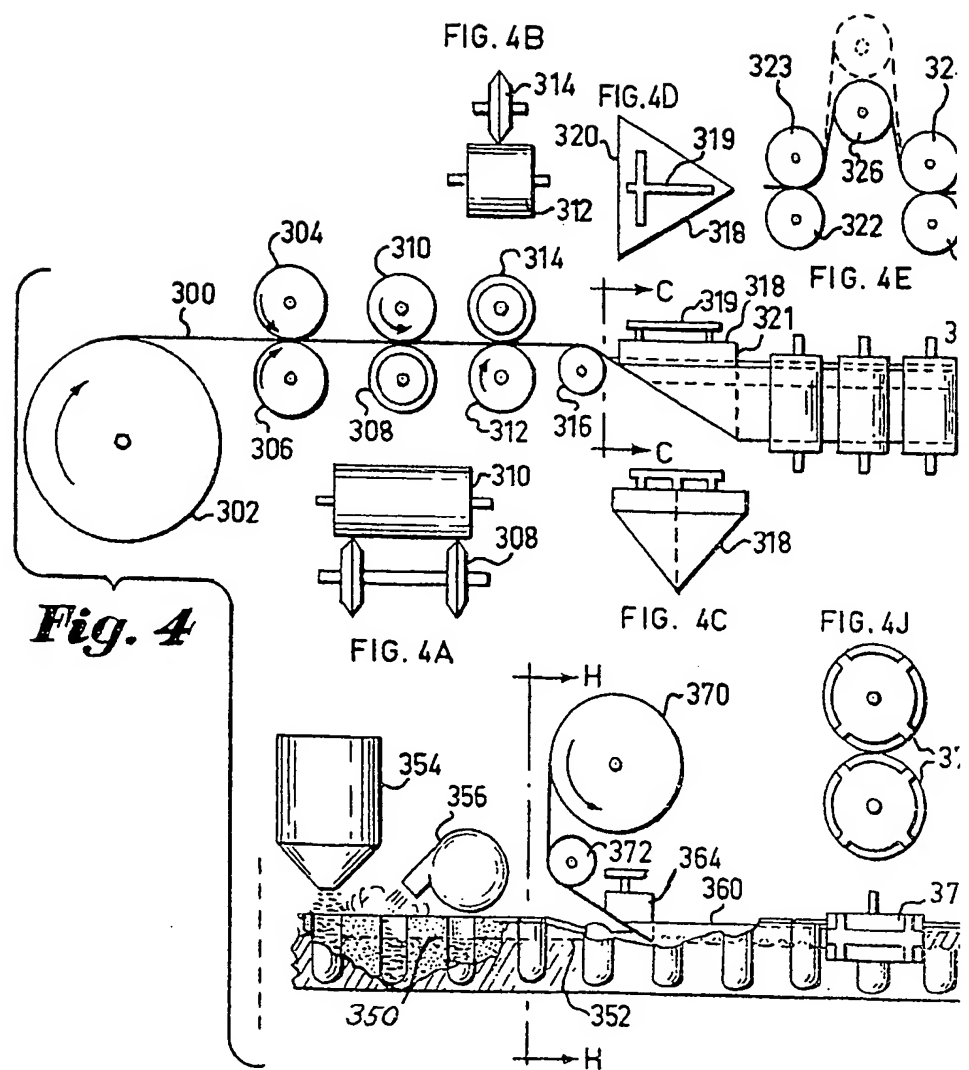


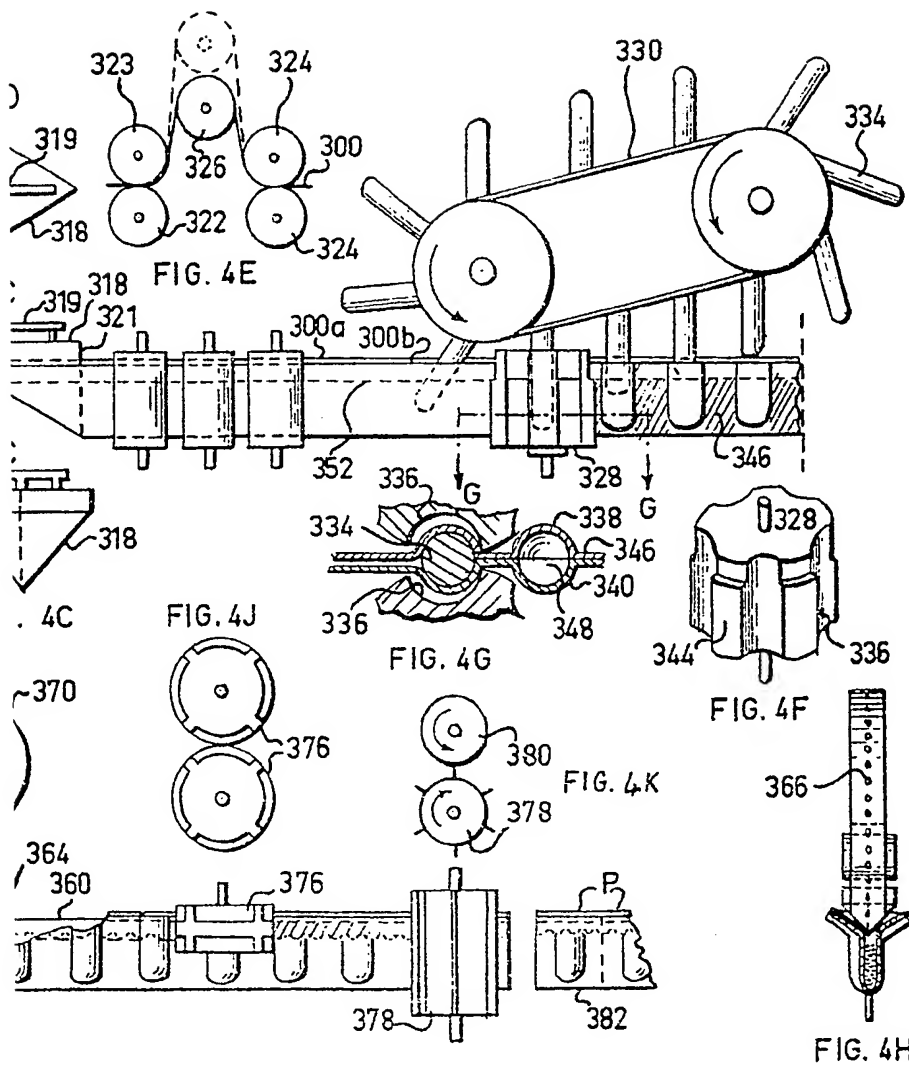


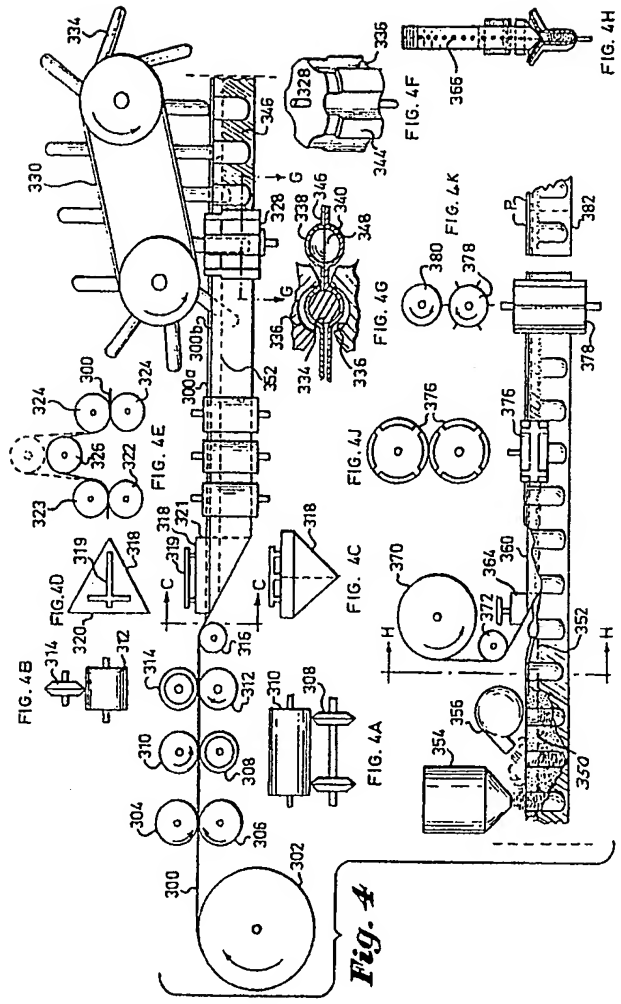


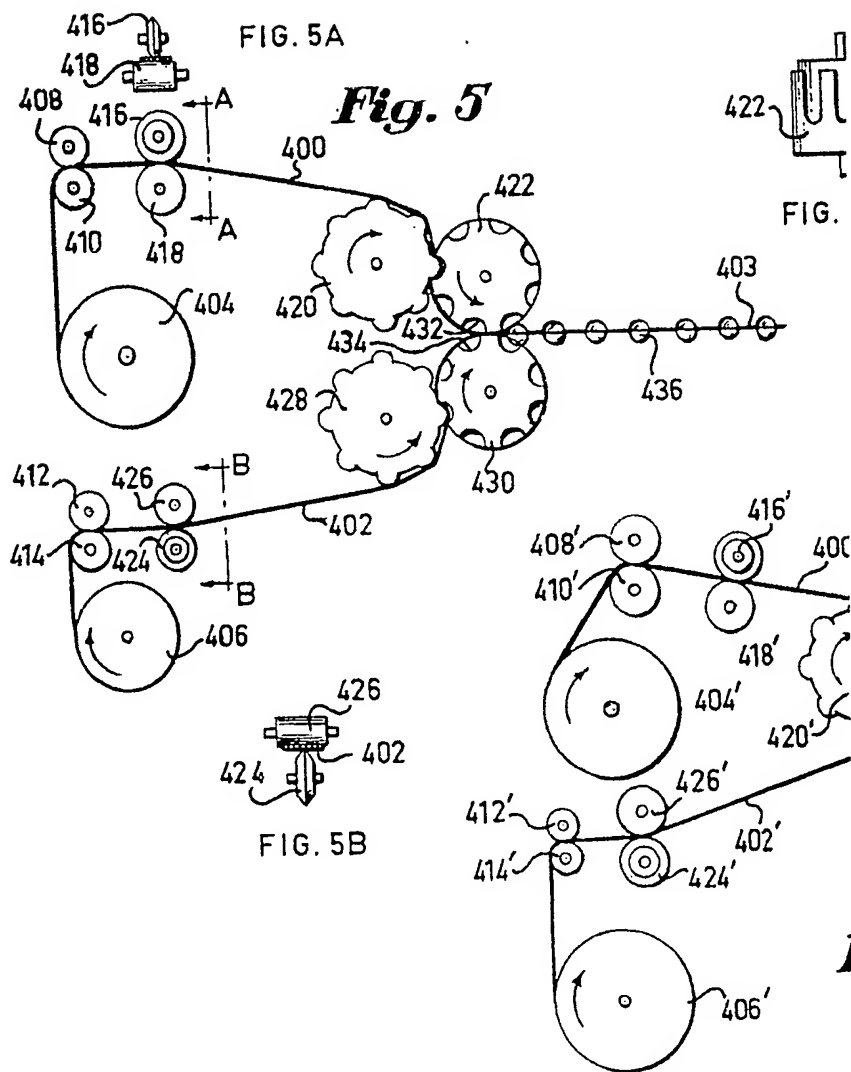












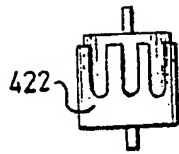


FIG. 5C

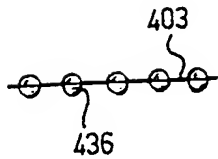


Fig. 7

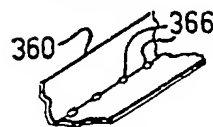


Fig. 8

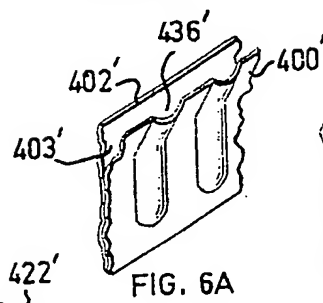
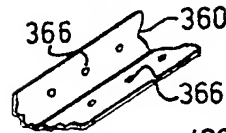


FIG. 6A

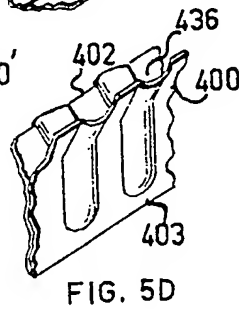


FIG. 5D

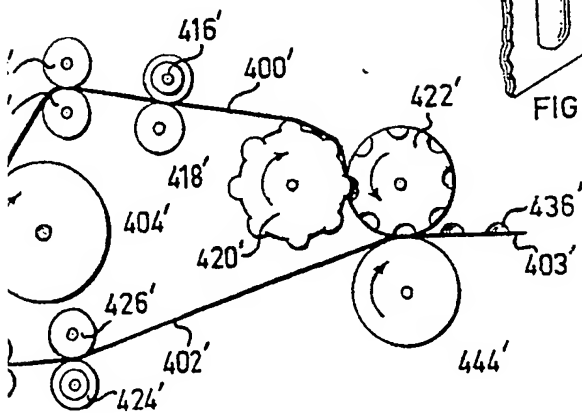


Fig. 6

